SEQUENCE LISTING

<110> Scholler, Nathalie B.
Disis, Mary L.
Hellstrom, Ingegerd
Hellstrom, Karl Erik

<120> SURFACE RECEPTOR ANTIGEN VACCINES

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<150> US 09/441,411
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<210> 6
<211> 1255
<212> PRT
<213> Homo sapiens

<400> 6

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            20                  25                  30
Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
        35                  40                  45
Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
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    50                  55                  60
Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65                  70                  75                  80
Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu
                85                  90                  95
Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
            100                 105                 110
Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro
        115                 120                 125
Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser
    130                 135                 140
Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln
145                 150                 155                 160
Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn
                165                 170                 175
Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala Cys
            180                 185                 190
His Pro Cys Ser Pro Met Cys Lys Gly Ser Arg Cys Trp Gly Glu Ser
        195                 200                 205
Ser Glu Asp Cys Gln Ser Leu Thr Arg Thr Val Cys Ala Gly Gly Cys
    210                 215                 220
Ala Arg Cys Lys Gly Pro Leu Pro Thr Asp Cys Cys His Glu Gln Cys
225                 230                 235                 240
Ala Ala Gly Cys Thr Gly Pro Lys His Ser Asp Cys Leu Ala Cys Leu
                245                 250                 255
His Phe Asn His Ser Gly Ile Cys Glu Leu His Cys Pro Ala Leu Val
            260                 265                 270
Thr Tyr Asn Thr Asp Thr Phe Glu Ser Met Pro Asn Pro Glu Gly Arg
        275                 280                 285
Tyr Thr Phe Gly Ala Ser Cys Val Thr Ala Cys Pro Tyr Asn Tyr Leu
    290                 295                 300
Ser Thr Asp Val Gly Ser Cys Thr Leu Val Cys Pro Leu His Asn Gln
305                 310                 315                 320
Glu Val Thr Ala Glu Asp Gly Thr Gln Arg Cys Glu Lys Cys Ser Lys
                325                 330                 335
Pro Cys Ala Arg Val Cys Tyr Gly Leu Gly Met Glu His Leu Arg Glu
            340                 345                 350
Val Arg Ala Val Thr Ser Ala Asn Ile Gln Glu Phe Ala Gly Cys Lys
        355                 360                 365
Lys Ile Phe Gly Ser Leu Ala Phe Leu Pro Glu Ser Phe Asp Gly Asp
    370                 375                 380
Pro Ala Ser Asn Thr Ala Pro Leu Gln Pro Glu Gln Leu Gln Val Phe
385                 390                 395                 400
Glu Thr Leu Glu Glu Ile Thr Gly Tyr Leu Tyr Ile Ser Ala Trp Pro
                405                 410                 415
Asp Ser Leu Pro Asp Leu Ser Val Phe Gln Asn Leu Gln Val Ile Arg
            420                 425                 430
Gly Arg Ile Leu His Asn Gly Ala Tyr Ser Leu Thr Leu Gln Gly Leu
        435                 440                 445
Gly Ile Ser Trp Leu Gly Leu Arg Ser Leu Arg Glu Leu Gly Ser Gly
    450                 455                 460
Leu Ala Leu Ile His His Asn Thr His Leu Cys Phe Val His Thr Val
465                 470                 475                 480
Pro Trp Asp Gln Leu Phe Arg Asn Pro His Gln Ala Leu Leu His Thr
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                485                 490                 495
Ala Asn Arg Pro Glu Asp Glu Cys Val Gly Glu Gly Leu Ala Cys His
            500                 505                 510
Gln Leu Cys Ala Arg Gly His Cys Trp Gly Pro Gly Pro Thr Gln Cys
        515                 520                 525
Val Asn Cys Ser Gln Phe Leu Arg Gly Gln Glu Cys Val Glu Glu Cys
    530                 535                 540
Arg Val Leu Gln Gly Leu Pro Arg Glu Tyr Val Asn Ala Arg His Cys
545                 550                 555                 560
Leu Pro Cys His Pro Glu Cys Gln Pro Gln Asn Gly Ser Val Thr Cys
                565                 570                 575
Phe Gly Pro Glu Ala Asp Gln Cys Val Ala Cys Ala His Tyr Lys Asp
            580                 585                 590
Pro Pro Phe Cys Val Ala Arg Cys Pro Ser Gly Val Lys Pro Asp Leu
        595                 600                 605
Ser Tyr Met Pro Ile Trp Lys Phe Pro Asp Glu Glu Gly Ala Cys Gln
    610                 615                 620
Pro Cys Pro Ile Asn Cys Thr His Ser Cys Val Asp Leu Asp Asp Lys
625                 630                 635                 640
Gly Cys Pro Ala Glu Gln Arg Ala Ser Pro Leu Thr Ser Ile Ile Ser
                645                 650                 655
Ala Val Val Gly Ile Leu Leu Val Val Val Leu Gly Val Val Phe Gly
            660                 665                 670
Ile Leu Ile Lys Arg Arg Gln Gln Lys Ile Arg Lys Tyr Thr Met Arg
        675                 680                 685
Arg Leu Leu Gln Glu Thr Glu Leu Val Glu Pro Leu Thr Pro Ser Gly
    690                 695                 700
Ala Met Pro Asn Gln Ala Gln Met Arg Ile Leu Lys Glu Thr Glu Leu
705                 710                 715                 720
Arg Lys Val Lys Val Leu Gly Ser Gly Ala Phe Gly Thr Val Tyr Lys
                725                 730                 735
Gly Ile Trp Ile Pro Asp Gly Glu Asn Val Lys Ile Pro Val Ala Ile
            740                 745                 750
Lys Val Leu Arg Glu Asn Thr Ser Pro Lys Ala Asn Lys Glu Ile Leu
        755                 760                 765
Asp Glu Ala Tyr Val Met Ala Gly Val Gly Ser Pro Tyr Val Ser Arg
    770                 775                 780
Leu Leu Gly Ile Cys Leu Thr Ser Thr Val Gln Leu Val Thr Gln Leu
785                 790                 795                 800
Met Pro Tyr Gly Cys Leu Leu Asp His Val Arg Glu Asn Arg Gly Arg
                805                 810                 815
Leu Gly Ser Gln Asp Leu Leu Asn Trp Cys Met Gln Ile Ala Lys Gly
            820                 825                 830
Met Ser Tyr Leu Glu Asp Val Arg Leu Val His Arg Asp Leu Ala Ala
        835                 840                 845
Arg Asn Val Leu Val Lys Ser Pro Asn His Val Lys Ile Thr Asp Phe
    850                 855                 860
Gly Leu Ala Arg Leu Leu Asp Ile Asp Glu Thr Glu Tyr His Ala Asp
865                 870                 875                 880
Gly Gly Lys Val Pro Ile Lys Trp Met Ala Leu Glu Ser Ile Leu Arg
                885                 890                 895
Arg Arg Phe Thr His Gln Ser Asp Val Trp Ser Tyr Gly Val Thr Val
            900                 905                 910
Trp Glu Leu Met Thr Phe Gly Ala Lys Pro Tyr Asp Gly Ile Pro Ala
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        915                 920                 925
Arg Glu Ile Pro Asp Leu Leu Glu Lys Gly Glu Arg Leu Pro Gln Pro
    930                 935                 940
Pro Ile Cys Thr Ile Asp Val Tyr Met Ile Met Val Lys Cys Trp Met
945                 950                 955                 960
Ile Asp Ser Glu Cys Arg Pro Arg Phe Arg Glu Leu Val Ser Glu Phe
                965                 970                 975
Ser Arg Met Ala Arg Asp Pro Gln Arg Phe Val Val Ile Gln Asn Glu
            980                 985                 990
Asp Leu Gly Pro Ala Ser Pro Leu Asp Ser Thr Phe Tyr Arg Ser Leu
        995                 1000                1005
Leu Glu Asp Asp Asp Met Gly Asp Leu Val Asp Ala Glu Glu Tyr Leu
    1010                1015                1020
Val Pro Gln Gln Gly Phe Phe Cys Pro Asp Pro Ala Pro Gly Ala Gly
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Gly Met Val His His Arg His Arg Ser Ser Ser Thr Arg Ser Gly Gly
                1045                1050                1055
Gly Asp Leu Thr Leu Gly Leu Glu Pro Ser Glu Glu Glu Ala Pro Arg
            1060                1065                1070
Ser Pro Leu Ala Pro Ser Glu Gly Ala Gly Ser Asp Val Phe Asp Gly
        1075                1080                1085
Asp Leu Gly Met Gly Ala Ala Lys Gly Leu Gln Ser Leu Pro Thr His
    1090                1095                1100
Asp Pro Ser Pro Leu Gln Arg Tyr Ser Glu Asp Pro Thr Val Pro Leu
1105                1110                1115                1120
Pro Ser Glu Thr Asp Gly Tyr Val Ala Pro Leu Thr Cys Ser Pro Gln
                1125                1130                1135
Pro Glu Tyr Val Asn Gln Pro Asp Val Arg Pro Gln Pro Pro Ser Pro
            1140                1145                1150
Arg Glu Gly Pro Leu Pro Ala Ala Arg Pro Ala Gly Ala Thr Leu Glu
        1155                1160                1165
Arg Pro Lys Thr Leu Ser Pro Gly Lys Asn Gly Val Val Lys Asp Val
    1170                1175                1180
Phe Ala Phe Gly Gly Ala Val Glu Asn Pro Glu Tyr Leu Thr Pro Gln
1185                1190                1195                1200
Gly Gly Ala Ala Pro Gln Pro His Pro Pro Pro Ala Phe Ser Pro Ala
                1205                1210                1215
Phe Asp Asn Leu Tyr Tyr Trp Asp Gln Asp Pro Pro Glu Arg Gly Ala
            1220                1225                1230
Pro Pro Ser Thr Phe Lys Gly Thr Pro Thr Ala Glu Asn Pro Glu Tyr
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Leu Gly Leu Asp Val Pro Val
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<211> 729
<212> DNA
<213> Drosophila melanogaster

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ctttactact actcgcagat cgtgggccat gtcttcagcc acgaaaaggc cctacgggag     180
caggccaaga aaatgaacgt ggagtcgctg cgctccaatg tggacaagag caaggagacg     240
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gcggagatac ggattgcgaa ggcggctatc accatctgct tcctgttctt cgtgtcgtgg     300
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<211> 378
<212> PRT
<213> Drosophila melanogaster

<400> 8

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            20                  25                  30
Pro Asp Gln Ile Gln Tyr Ile Pro Glu His Trp Leu Thr Gln Leu Glu
        35                  40                  45
Pro Pro Ala Ser Met His Tyr Met Leu Gly Val Phe Tyr Ile Phe Leu
    50                  55                  60
Phe Cys Ala Ser Thr Val Gly Asn Gly Met Val Ile Trp Ile Phe Ser
65                  70                  75                  80
Thr Ser Lys Ser Leu Arg Thr Pro Ser Asn Met Phe Val Leu Asn Leu
                85                  90                  95
Ala Val Phe Asp Leu Ile Met Cys Leu Lys Ala Pro Ile Phe Asn Ser
            100                 105                 110
Phe His Arg Gly Phe Ala Ile Tyr Leu Gly Asn Thr Trp Cys Gln Ile
        115                 120                 125
Phe Ala Ser Ile Gly Ser Tyr Ser Gly Ile Gly Ala Gly Met Thr Asn
    130                 135                 140
Ala Ala Ile Gly Tyr Asp Arg Tyr Asn Val Ile Thr Lys Pro Met Asn
145                 150                 155                 160
Arg Asn Met Thr Phe Thr Lys Ala Val Ile Met Asn Ile Ile Ile Trp
                165                 170                 175
Leu Tyr Cys Thr Pro Trp Val Val Leu Pro Leu Thr Gln Phe Trp Asp
            180                 185                 190
Arg Phe Val Pro Glu Gly Tyr Leu Thr Ser Cys Ser Phe Asp Tyr Leu
        195                 200                 205
Ser Asp Asn Phe Asp Thr Arg Leu Phe Val Gly Thr Ile Phe Phe Phe
    210                 215                 220
Ser Phe Val Cys Pro Thr Leu Met Ile Leu Tyr Tyr Tyr Ser Gln Ile
225                 230                 235                 240
Val Gly His Val Phe Ser His Glu Lys Ala Leu Arg Glu Gln Ala Lys
                245                 250                 255
Lys Met Asn Val Glu Ser Leu Arg Ser Asn Val Asp Lys Ser Lys Glu
            260                 265                 270
Thr Ala Glu Ile Arg Ile Ala Lys Ala Ala Ile Thr Ile Cys Phe Leu
        275                 280                 285
Phe Phe Val Ser Trp Thr Pro Tyr Gly Val Met Ser Leu Ile Gly Ala
    290                 295                 300
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```
Phe Gly Asp Lys Ser Leu Leu Thr Gln Gly Ala Thr Met Ile Pro Ala
305                 310                 315                 320
Cys Thr Cys Lys Leu Val Ala Cys Ile Asp Pro Phe Val Tyr Ala Ile
                325                 330                 335
Ser His Pro Arg Tyr Arg Leu Glu Leu Gln Lys Arg Cys Pro Trp Leu
            340                 345                 350
Gly Val Asn Glu Lys Ser Gly Glu Ile Ser Ser Ala Gln Ser Thr Thr
        355                 360                 365
Thr Gln Glu Gln Gln Gln Thr Thr Ala Ala
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<210> 9
<211> 191
<212> PRT
<213> Homo sapiens

<400> 9

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            20                  25                  30
Leu Arg Leu Pro Ala Ser Pro Glu Thr His Leu Asp Met Leu Arg His
        35                  40                  45
Leu Tyr Gln Gly Cys Gln Val Val Gln Gly Asn Leu Glu Leu Thr Tyr
    50                  55                  60
Leu Pro Thr Asn Ala Ser Leu Ser Phe Leu Gln Asp Ile Gln Glu Val
65                  70                  75                  80
Gln Gly Tyr Val Leu Ile Ala His Asn Gln Val Arg Gln Val Pro Leu
                85                  90                  95
Gln Arg Leu Arg Ile Val Arg Gly Thr Gln Leu Phe Glu Asp Asn Tyr
            100                 105                 110
Ala Leu Ala Val Leu Asp Asn Gly Asp Pro Leu Asn Asn Thr Thr Pro
        115                 120                 125
Val Thr Gly Ala Ser Pro Gly Gly Leu Arg Glu Leu Gln Leu Arg Ser
    130                 135                 140
Leu Thr Glu Ile Leu Lys Gly Gly Val Leu Ile Gln Arg Asn Pro Gln
145                 150                 155                 160
Leu Cys Tyr Gln Asp Thr Ile Leu Trp Lys Asp Ile Phe His Lys Asn
                165                 170                 175
Asn Gln Leu Ala Leu Thr Leu Ile Asp Thr Asn Arg Ser Arg Ala
            180                 185                 190
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<210> 10
<211> 1277
<212> DNA
<213> Homo sapiens

<400> 10

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tgttgggtgg tatttctgtt gcagttgttg ttttcttgcc tgcttggtga catatttcta     300
ttgacttgac acttaactgg catcttatct aggtagataa tgctaattca aaattctgca     360
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agtttgagtt tctagatgat gcccatttta attcatacga ggaaatatct tctagtatag     600
tttctgcttg attaattcta tgtttgtctc ttagggacat ctattaattt tataatgctg     660
ccttttttc agacttctgt ttcagaatat tcgctttcat gaatgtaatc cttggctata     720
gtaggaatga aataataaaa gcagtagctt ctgtctgccc tccttggtta tgcagtcctt     780
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ggttgtggaa attggcaggg ttaggtggct actcactccc aatccacatc cacaataaat     900
cacttttat tatcttatca aaatctgtag aatgcctctt tattctattt tgttgctgcg     960
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tgcttctctg ctgctgt                                                  1277
```

<210> 11
<211> 356
<212> PRT
<213> Mus musculus

<400> 11

```
Met Ala Lys Thr Ile Arg Arg Leu Ser Val Ala Phe Leu Thr Leu Ser
 1               5                  10                  15
Asp Arg Gly Pro His Tyr Lys Ile Leu Leu Pro Leu Pro His Lys Gly
            20                  25                  30
Trp Thr Pro Gly Leu Thr His Asn Ala Ser Leu Tyr Cys Ala Ser Ile
        35                  40                  45
Ile Leu Lys Asn Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val
    50                  55                  60
Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn
65                  70                  75                  80
Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser
                85                  90                  95
Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu
            100                 105                 110
Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys
        115                 120                 125
Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu
    130                 135                 140
His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln
145                 150                 155                 160
Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu
                165                 170                 175
Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln
            180                 185                 190
Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln
        195                 200                 205
Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr
    210                 215                 220
Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu
225                 230                 235                 240
Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val
```

```
                245                 250                 255
Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile
            260                 265                 270
Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr
        275                 280                 285
Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val
    290                 295                 300
Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg
305                 310                 315                 320
Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg
                325                 330                 335
Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys
            340                 345                 350
Pro Asn Ala Glu
        355
```

<210> 12
<211> 356
<212> PRT
<213> Mus musculus

<400> 12

```
Met Ala Lys Thr Ile Arg Arg Leu Ser Val Ala Phe Leu Thr Leu Ser
 1               5                  10                  15
Asp Arg Gly Pro His Tyr Lys Ile Leu Leu Pro Leu Pro His Lys Gly
            20                  25                  30
Trp Thr Pro Gly Leu Thr His Asn Ala Ser Leu Tyr Cys Ala Ser Ile
        35                  40                  45
Ile Leu Lys Asn Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val
    50                  55                  60
Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn
65                  70                  75                  80
Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser
                85                  90                  95
Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu
            100                 105                 110
Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys
        115                 120                 125
Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu
    130                 135                 140
His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln
145                 150                 155                 160
Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu
                165                 170                 175
Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln
            180                 185                 190
Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln
        195                 200                 205
Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr
    210                 215                 220
Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu
225                 230                 235                 240
Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val
                245                 250                 255
```

```
Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile
            260                 265                 270
Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr
        275                 280                 285
Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val
    290                 295                 300
Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg
305                 310                 315                 320
Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg
                325                 330                 335
Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys
            340                 345                 350
Pro Asn Ala Glu
        355
```

<210> 13
<211> 309
<212> PRT
<213> Mus musculus

<400> 13

```
Met Asp Pro Arg Cys Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr
 1               5                  10                  15
Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe
            20                  25                  30
Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile
        35                  40                  45
Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val
    50                  55                  60
Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala
65                  70                  75                  80
Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg
                85                  90                  95
Leu His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile
            100                 105                 110
Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr
        115                 120                 125
Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala
    130                 135                 140
Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys
145                 150                 155                 160
Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser
                165                 170                 175
Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr
            180                 185                 190
Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly
        195                 200                 205
Val Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys
    210                 215                 220
Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln
225                 230                 235                 240
Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu
                245                 250                 255
Val Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser
```

```
            260                 265                 270
Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp
        275                 280                 285
Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala
    290                 295                 300
Lys Pro Asn Ala Glu
305

<210> 14
<211> 314
<212> PRT
<213> Mus musculus

<400> 14
Met Tyr Val Ile Lys Thr Cys Ala Thr Cys Thr Met Gly Leu Ala Ile
 1               5                  10                  15
Leu Ile Phe Val Thr Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu
            20                  25                  30
Thr Gln Ala Tyr Phe Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr
        35                  40                  45
Lys Ala Gln Asn Ile Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp
    50                  55                  60
Gln Gln Lys Leu Val Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu
65                  70                  75                  80
Asp Ser Val Asn Ala Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn
                85                  90                  95
Asn Trp Thr Leu Arg Leu His Asn Val Gln Ile Lys Asp Met Gly Ser
            100                 105                 110
Tyr Asp Cys Phe Ile Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu
        115                 120                 125
Gln Gln Thr Leu Thr Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro
    130                 135                 140
Glu Ile Lys Leu Ala Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu
145                 150                 155                 160
Thr Cys Thr Ser Lys Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe
                165                 170                 175
Leu Ile Thr Asn Ser Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser
            180                 185                 190
Gln Asp Asn Val Thr Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu
        195                 200                 205
Ser Phe Pro Asp Gly Val Trp His Met Thr Val Val Cys Val Leu Glu
    210                 215                 220
Thr Glu Ser Met Lys Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu
225                 230                 235                 240
Phe Pro Ser Pro Gln Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr
                245                 250                 255
Val Ala Leu Leu Leu Val Met Leu Leu Ile Ile Val Cys His Lys Lys
            260                 265                 270
Pro Asn Gln Pro Ser Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg
        275                 280                 285
Asp Ser Asn Ala Asp Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro
    290                 295                 300
Gln Ile Ala Ser Ala Lys Pro Asn Ala Glu
305                 310
```

<210> 15
<211> 303
<212> PRT
<213> Mus musculus

<400> 15
Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val Leu Leu Ile Ser Asp
1 5 10 15
Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn Gly Thr Ala Tyr Leu
20 25 30
Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser Leu Ser Glu Leu Val
35 40 45
Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu Tyr Glu His Tyr Leu
50 55 60
Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys Tyr Leu Gly Arg Thr
65 70 75 80
Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu His Asn Val Gln Ile
85 90 95
Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln Lys Lys Pro Pro Thr
100 105 110
Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu Leu Ser Val Ile Ala
115 120 125
Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln Asn Val Thr Gly Asn
130 135 140
Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln Gly His Pro Lys Pro
145 150 155 160
Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr Asn Glu Tyr Gly Asp
165 170 175
Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu Leu Phe Ser Ile Ser
180 185 190
Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val Trp His Met Thr Val
195 200 205
Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile Ser Ser Lys Pro Leu
210 215 220
Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr Tyr Trp Lys Glu Ile
225 230 235 240
Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val Met Leu Leu Ile Ile
245 250 255
Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg Pro Ser Asn Thr Ala
260 265 270
Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg Glu Thr Ile Asn Leu
275 280 285
Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys Pro Asn Ala Glu
290 295 300

<210> 16
<211> 356
<212> PRT
<213> Mus musculus

<400> 16
Met Ala Lys Thr Ile Arg Arg Leu Ser Val Ala Phe Leu Thr Leu Ser
1 5 10 15

```
Asp Arg Gly Pro His Tyr Lys Ile Leu Leu Pro Leu Pro His Lys Gly
            20                  25                  30
Trp Thr Pro Gly Leu Thr His Asn Ala Ser Leu Tyr Cys Ala Ser Ile
        35                  40                  45
Ile Leu Lys Asn Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val
    50                  55                  60
Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn
65                  70                  75                  80
Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser
                85                  90                  95
Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu
            100                 105                 110
Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys
        115                 120                 125
Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu
    130                 135                 140
His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln
145                 150                 155                 160
Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu
                165                 170                 175
Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln
            180                 185                 190
Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln
        195                 200                 205
Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr
    210                 215                 220
Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu
225                 230                 235                 240
Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val
                245                 250                 255
Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile
            260                 265                 270
Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr
        275                 280                 285
Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val
    290                 295                 300
Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg
305                 310                 315                 320
Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg
                325                 330                 335
Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys
            340                 345                 350
Pro Asn Ala Glu
        355
```

<210> 17
<211> 356
<212> PRT
<213> Mus musculus

<400> 17

```
Met Ala Lys Thr Ile Arg Arg Leu Ser Val Ala Phe Leu Thr Leu Ser
 1               5                  10                  15
Asp Arg Gly Pro His Tyr Lys Ile Leu Leu Pro Leu Pro His Lys Gly
```

```
            20                  25                  30
Trp Thr Pro Gly Leu Thr His Asn Ala Ser Leu Tyr Cys Ala Ser Ile
        35                  40                  45
Ile Leu Lys Asn Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val
    50                  55                  60
Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn
65                  70                  75                  80
Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser
                85                  90                  95
Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu
            100                 105                 110
Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys
        115                 120                 125
Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu
    130                 135                 140
His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln
145                 150                 155                 160
Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu
                165                 170                 175
Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln
            180                 185                 190
Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln
        195                 200                 205
Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr
    210                 215                 220
Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu
225                 230                 235                 240
Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val
                245                 250                 255
Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile
            260                 265                 270
Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr
        275                 280                 285
Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val
    290                 295                 300
Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg
305                 310                 315                 320
Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg
                325                 330                 335
Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys
            340                 345                 350
Pro Asn Ala Glu
        355
```

<210> 18
<211> 309
<212> PRT
<213> Mus musculus

<400> 18

```
Met Asp Pro Arg Cys Thr Met Gly Leu Ala Ile Leu Ile Phe Val Thr
 1               5                  10                  15
Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe
            20                  25                  30
```

```
Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile
        35                  40                  45
Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val
    50                  55                  60
Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala
65                  70                  75                  80
Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg
                85                  90                  95
Leu His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile
            100                 105                 110
Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr
        115                 120                 125
Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala
    130                 135                 140
Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys
145                 150                 155                 160
Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser
                165                 170                 175
Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr
            180                 185                 190
Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly
        195                 200                 205
Val Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys
    210                 215                 220
Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln
225                 230                 235                 240
Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu
                245                 250                 255
Val Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser
            260                 265                 270
Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp
        275                 280                 285
Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala
    290                 295                 300
Lys Pro Asn Ala Glu
305

<210> 19
<211> 314
<212> PRT
<213> Mus musculus

<400> 19
Met Tyr Val Ile Lys Thr Cys Ala Thr Cys Thr Met Gly Leu Ala Ile
 1               5                  10                  15
Leu Ile Phe Val Thr Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu
            20                  25                  30
Thr Gln Ala Tyr Phe Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr
        35                  40                  45
Lys Ala Gln Asn Ile Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp
    50                  55                  60
Gln Gln Lys Leu Val Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu
65                  70                  75                  80
Asp Ser Val Asn Ala Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn
```

```
                85                  90                  95
Asn Trp Thr Leu Arg Leu His Asn Val Gln Ile Lys Asp Met Gly Ser
            100                 105                 110
Tyr Asp Cys Phe Ile Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu
        115                 120                 125
Gln Gln Thr Leu Thr Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro
    130                 135                 140
Glu Ile Lys Leu Ala Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu
145                 150                 155                 160
Thr Cys Thr Ser Lys Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe
                165                 170                 175
Leu Ile Thr Asn Ser Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser
            180                 185                 190
Gln Asp Asn Val Thr Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu
        195                 200                 205
Ser Phe Pro Asp Gly Val Trp His Met Thr Val Val Cys Val Leu Glu
    210                 215                 220
Thr Glu Ser Met Lys Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu
225                 230                 235                 240
Phe Pro Ser Pro Gln Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr
                245                 250                 255
Val Ala Leu Leu Leu Val Met Leu Leu Ile Ile Val Cys His Lys Lys
            260                 265                 270
Pro Asn Gln Pro Ser Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg
        275                 280                 285
Asp Ser Asn Ala Asp Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro
    290                 295                 300
Gln Ile Ala Ser Ala Lys Pro Asn Ala Glu
305                 310
```

<210> 20
<211> 303
<212> PRT
<213> Mus musculus

<400> 20

```
Met Gly Leu Ala Ile Leu Ile Phe Val Thr Val Leu Leu Ile Ser Asp
 1               5                  10                  15
Ala Val Ser Val Glu Thr Gln Ala Tyr Phe Asn Gly Thr Ala Tyr Leu
            20                  25                  30
Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile Ser Leu Ser Glu Leu Val
        35                  40                  45
Val Phe Trp Gln Asp Gln Gln Lys Leu Val Leu Tyr Glu His Tyr Leu
    50                  55                  60
Gly Thr Glu Lys Leu Asp Ser Val Asn Ala Lys Tyr Leu Gly Arg Thr
65                  70                  75                  80
Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg Leu His Asn Val Gln Ile
                85                  90                  95
Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile Gln Lys Lys Pro Pro Thr
            100                 105                 110
Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr Glu Leu Ser Val Ile Ala
        115                 120                 125
Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala Gln Asn Val Thr Gly Asn
    130                 135                 140
```

```
Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys Gln Gly His Pro Lys Pro
145                 150                 155                 160
Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser Thr Asn Glu Tyr Gly Asp
                165                 170                 175
Asn Met Gln Ile Ser Gln Asp Asn Val Thr Glu Leu Phe Ser Ile Ser
            180                 185                 190
Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly Val Trp His Met Thr Val
        195                 200                 205
Val Cys Val Leu Glu Thr Glu Ser Met Lys Ile Ser Ser Lys Pro Leu
    210                 215                 220
Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln Thr Tyr Trp Lys Glu Ile
225                 230                 235                 240
Thr Ala Ser Val Thr Val Ala Leu Leu Leu Val Met Leu Leu Ile Ile
                245                 250                 255
Val Cys His Lys Lys Pro Asn Gln Pro Ser Arg Pro Ser Asn Thr Ala
            260                 265                 270
Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp Arg Glu Thr Ile Asn Leu
        275                 280                 285
Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala Lys Pro Asn Ala Glu
    290                 295                 300
```

<210> 21
<211> 1424
<212> DNA
<213> Homo sapiens

<400> 21

```
aggagcctta ggaggtacgg ggagctcgca aatactcctt ttggtttatt cttaccacct      60
tgcttctgtg ttccttggga atgctgctgt gcttatgcat ctggtctctt tttggagcta     120
cagtggacag gcatttgtga cagcactatg ggactgagta acattctctt tgtgatggcc     180
ttcctgctct ctggtgctgc tcctctgaag attcaagctt atttcaatga gactgcagac     240
ctgccatgcc aatttgcaaa ctctcaaaac caaagcctga gtgagctagt agtattttgg     300
caggaccagg aaaacttggt tctgaatgag gtatacttag gcaaagagaa atttgacagt     360
gttcattcca agtatatggg ccgcacaagt tttgattcgg acagttggac cctgagactt     420
cacaatcttc agatcaagga caagggcttg tatcaatgta tcatccatca caaaaagccc     480
acaggaatga ttcgcatcca ccagatgaat tctgaactgt cagtgcttgc taacttcagt     540
caacctgaaa tagtaccaat ttctaatata acagaaaatg tgtacataaa tttgacctgc     600
tcatctatac acggttaccc agaacctaag aagatgagtg ttttgctaag aaccaagaat     660
tcaactatcg agtatgatgg tattatgcag aaatctcaag ataatgtcac agaactgtac     720
gacgtttcca tcagcttgtc tgtttcattc cctgatgtta cgagcaatat gaccatcttc     780
tgtattctgg aaactgacaa gacgcggctt ttatcttcac ctttctctat agagcttgag     840
gaccctcagc ctcccccaga ccacattcct tggattacag ctgtacttcc aacagttatt     900
atatgtgtga tggttttctg tctaattcta tggaaatgga agaagaagaa gcggcctcgc     960
aactcttata aatgtggaac caacacaatg gagagggaag agagtgaaca gaccaagaaa    1020
agagaaaaaa tccatatacc tgaaagatct gatgaagccc agcgtgtttt taaaagttcg    1080
aagacatctt catgcgacaa aagtgataca tgtttttaat taaagagtaa agcccataca    1140
agtattcatt ttttctaccc tttcctttgt aagttcctgg gcaacctttt tgatttcttc    1200
cagaaggcaa aaagacatta ccatgagtaa taaggggct ccaggactcc ctctaagtgg     1260
aatagcctcc ctgtaactcc agctctgctc cgtatgccaa gaggagactt taattctctt    1320
actgcttctt ttcacttcag agcacactta tgggccaagc ccagcttaat ggctcatgac    1380
ctggaaataa aatttaggac caataaaaaa aaaaaaaaaa aaaa                     1424
```

<210> 22
<211> 323

<212> PRT
<213> Homo sapiens

<400> 22
Met Gly Leu Ser Asn Ile Leu Phe Val Met Ala Phe Leu Leu Ser Gly
 1   5   10   15
Ala Ala Pro Leu Lys Ile Gln Ala Tyr Phe Asn Glu Thr Ala Asp Leu
            20   25   30
Pro Cys Gln Phe Ala Asn Ser Gln Asn Gln Ser Leu Ser Glu Leu Val
        35   40   45
Val Phe Trp Gln Asp Gln Glu Asn Leu Val Leu Asn Glu Val Tyr Leu
    50   55   60
Gly Lys Glu Lys Phe Asp Ser Val His Ser Lys Tyr Met Gly Arg Thr
65   70   75   80
Ser Phe Asp Ser Asp Ser Trp Thr Leu Arg Leu His Asn Leu Gln Ile
                85   90   95
Lys Asp Lys Gly Leu Tyr Gln Cys Ile Ile His His Lys Lys Pro Thr
            100   105   110
Gly Met Ile Arg Ile His Gln Met Asn Ser Glu Leu Ser Val Leu Ala
        115   120   125
Asn Phe Ser Gln Pro Glu Ile Val Pro Ile Ser Asn Ile Thr Glu Asn
    130   135   140
Val Tyr Ile Asn Leu Thr Cys Ser Ser Ile His Gly Tyr Pro Glu Pro
145   150   155   160
Lys Lys Met Ser Val Leu Leu Arg Thr Lys Asn Ser Thr Ile Glu Tyr
                165   170   175
Asp Gly Ile Met Gln Lys Ser Gln Asp Asn Val Thr Glu Leu Tyr Asp
            180   185   190
Val Ser Ile Ser Leu Ser Val Ser Phe Pro Asp Val Thr Ser Asn Met
        195   200   205
Thr Ile Phe Cys Ile Leu Glu Thr Asp Lys Thr Arg Leu Leu Ser Ser
    210   215   220
Pro Phe Ser Ile Glu Leu Glu Asp Pro Gln Pro Pro Pro Asp His Ile
225   230   235   240
Pro Trp Ile Thr Ala Val Leu Pro Thr Val Ile Ile Cys Val Met Val
                245   250   255
Phe Cys Leu Ile Leu Trp Lys Trp Lys Lys Lys Lys Arg Pro Arg Asn
            260   265   270
Ser Tyr Lys Cys Gly Thr Asn Thr Met Glu Arg Glu Glu Ser Glu Gln
        275   280   285
Thr Lys Lys Arg Glu Lys Ile His Ile Pro Glu Arg Ser Asp Glu Ala
    290   295   300
Gln Arg Val Phe Lys Ser Ser Lys Thr Ser Ser Cys Asp Lys Ser Asp
305   310   315   320
Thr Cys Phe

<210> 23
<211> 1183
<212> DNA
<213> Mus musculus

<400> 23
ggagcaagca gacgcgtaag agtggctcct gtaggcagca cggacttgaa caaccagact 60

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cctgtagacg tgttccagaa cttacggaag cacccacgat ggaccccaga tgcaccatgg     120
gcttggcaat ccttatcttt gtgacagtct tgctgatctc agatgctgtt tccgtggaga     180
cgcaagctta tttcaatggg actgcatatc tgccgtgccc atttacaaag gctcaaaaca     240
taagcctgag tgagctggta gtattttggc aggaccagca aaagttggtt ctgtacgagc     300
actatttggg cacagagaaa cttgatagtg tgaatgccaa gtacctgggc cgcacgagct     360
ttgacaggaa caactggact ctacgacttc acaatgttca gatcaaggac atgggctcgt     420
atgattgttt tatacaaaaa aagccaccca caggatcaat tatcctccaa cagacattaa     480
cagaactgtc agtgatcgcc aacttcagtg aacctgaaat aaaactggct cagaatgtaa     540
caggaaattc tggcataaat ttgacctgca cgtctaagca aggtcacccg aaacctaaga     600
agatgtattt tctgataact aattcaacta atgagtatgg tgataacatg cagatatcac     660
aagataatgt cacagaactg ttcagtatct ccaacagcct ctctctttca ttcccggatg     720
gtgtgtggca tatgaccgtt gtgtgtgttc tggaaacgga gtcaatgaag atttcctcca     780
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cttcagttac tgtggccctc ctccttgtga tgctgctcat cattgtatgt cacaagaagc     900
cgaatcagcc tagcaggccc agcaacacag cctctaagtt agagcgggat agtaacgctg     960
acagagagac tatcaacctg aaggaacttg aaccccaaat tgcttcagca aaaccaaatg    1020
cagagtgaag gcagtgagag cctgaggaaa gagttaaaaa ttgctttgcc tgaaataaga    1080
agtgcagagt ttctcagaat tcaaaaatgt tctcagctga ttggaattct acagttgaat    1140
aattaaagaa caaaatacac aacagtgaaa aaaaaaaaaa aaa                      1183
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<210> 24
<211> 309
<212> PRT
<213> Mus musculus

<400> 24

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 1               5                  10                  15
Val Leu Leu Ile Ser Asp Ala Val Ser Val Glu Thr Gln Ala Tyr Phe
            20                  25                  30
Asn Gly Thr Ala Tyr Leu Pro Cys Pro Phe Thr Lys Ala Gln Asn Ile
        35                  40                  45
Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Gln Lys Leu Val
    50                  55                  60
Leu Tyr Glu His Tyr Leu Gly Thr Glu Lys Leu Asp Ser Val Asn Ala
65                  70                  75                  80
Lys Tyr Leu Gly Arg Thr Ser Phe Asp Arg Asn Asn Trp Thr Leu Arg
                85                  90                  95
Leu His Asn Val Gln Ile Lys Asp Met Gly Ser Tyr Asp Cys Phe Ile
            100                 105                 110
Gln Lys Lys Pro Pro Thr Gly Ser Ile Ile Leu Gln Gln Thr Leu Thr
        115                 120                 125
Glu Leu Ser Val Ile Ala Asn Phe Ser Glu Pro Glu Ile Lys Leu Ala
    130                 135                 140
Gln Asn Val Thr Gly Asn Ser Gly Ile Asn Leu Thr Cys Thr Ser Lys
145                 150                 155                 160
Gln Gly His Pro Lys Pro Lys Lys Met Tyr Phe Leu Ile Thr Asn Ser
                165                 170                 175
Thr Asn Glu Tyr Gly Asp Asn Met Gln Ile Ser Gln Asp Asn Val Thr
            180                 185                 190
Glu Leu Phe Ser Ile Ser Asn Ser Leu Ser Leu Ser Phe Pro Asp Gly
        195                 200                 205
Val Trp His Met Thr Val Val Cys Val Leu Glu Thr Glu Ser Met Lys
    210                 215                 220
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Ile Ser Ser Lys Pro Leu Asn Phe Thr Gln Glu Phe Pro Ser Pro Gln
225                 230                 235                 240
Thr Tyr Trp Lys Glu Ile Thr Ala Ser Val Thr Val Ala Leu Leu Leu
                245                 250                 255
Val Met Leu Leu Ile Ile Val Cys His Lys Lys Pro Asn Gln Pro Ser
            260                 265                 270
Arg Pro Ser Asn Thr Ala Ser Lys Leu Glu Arg Asp Ser Asn Ala Asp
        275                 280                 285
Arg Glu Thr Ile Asn Leu Lys Glu Leu Glu Pro Gln Ile Ala Ser Ala
    290                 295                 300
Lys Pro Asn Ala Glu
305
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<210> 25
<211> 1112
<212> DNA
<213> Homo sapiens

<400> 25

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gagtggggtc atttccagat attaggtcac agcagaagca gccaaaatgg atccccagtg     120
cactatggga ctgagtaaca ttctctttgt gatggccttc ctgctctctg gtgctgctcc     180
tctgaagatt caagcttatt tcaatgagac tgcagacctg ccatgccaat ttgcaaactc     240
tcaaaaccaa agcctgagtg agctagtagt attttggcag gaccaggaaa acttggttct     300
gaatgaggta tacttaggca aagagaaatt tgacagtgtt cattccaagt atatgggccg     360
cacaagtttt gattcggaca gttggaccct gagacttcac aatcttcaga tcaaggacaa     420
gggcttgtat caatgtatca tccatcacaa aaagcccaca ggaatgattc gcatccacca     480
gatgaattct gaactgtcag tgcttgctaa cttcagtcaa cctgaaatag taccaatttc     540
taatataaca gaaaatgtgt acataaattt gacctgctca tctatacacg gttacccaga     600
acctaagaag atgagtgttt tgctaagaac caagaattca actatcgagt atgatggtat     660
tatgcagaaa tctcaagata atgtcacaga actgtacgac gtttccatca gcttgtctgt     720
ttcattccct gatgttacga gcaatatgac catcttctgt attctggaaa ctgacaagac     780
gcggctttta tcttcacctt tctctataga gcttgaggac cctcagcctc ccccagacca     840
cattccttgg attacagctg tacttccaac agttattata tgtgtgatgg ttttctgtct     900
aattctatgg aaatggaaga agaagaagcg gcctcgcaac tcttataaat gtggaaccaa     960
cacaatggag agggaagaga gtgaacagac caagaaaaga gaaaaaatcc atatacctga    1020
aagatctgat gaagcccagc gtgtttttaa aagttcgaag acatcttcat gcgacaaaag    1080
tgatacatgt ttttaattaa agagtaaagc cc                                  1112
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<210> 26
<211> 329
<212> PRT
<213> Homo sapiens

<400> 26

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Met Asp Pro Gln Cys Thr Met Gly Leu Ser Asn Ile Leu Phe Val Met
 1               5                  10                  15
Ala Phe Leu Leu Ser Gly Ala Ala Pro Leu Lys Ile Gln Ala Tyr Phe
            20                  25                  30
Asn Glu Thr Ala Asp Leu Pro Cys Gln Phe Ala Asn Ser Gln Asn Gln
        35                  40                  45
Ser Leu Ser Glu Leu Val Val Phe Trp Gln Asp Gln Glu Asn Leu Val
    50                  55                  60
Leu Asn Glu Val Tyr Leu Gly Lys Glu Lys Phe Asp Ser Val His Ser
```

```
65                  70                  75                  80
Lys Tyr Met Gly Arg Thr Ser Phe Asp Ser Asp Ser Trp Thr Leu Arg
                85                  90                  95
Leu His Asn Leu Gln Ile Lys Asp Lys Gly Leu Tyr Gln Cys Ile Ile
            100                 105                 110
His His Lys Lys Pro Thr Gly Met Ile Arg Ile His Gln Met Asn Ser
        115                 120                 125
Glu Leu Ser Val Leu Ala Asn Phe Ser Gln Pro Glu Ile Val Pro Ile
    130                 135                 140
Ser Asn Ile Thr Glu Asn Val Tyr Ile Asn Leu Thr Cys Ser Ser Ile
145                 150                 155                 160
His Gly Tyr Pro Glu Pro Lys Lys Met Ser Val Leu Leu Arg Thr Lys
                165                 170                 175
Asn Ser Thr Ile Glu Tyr Asp Gly Ile Met Gln Lys Ser Gln Asp Asn
            180                 185                 190
Val Thr Glu Leu Tyr Asp Val Ser Ile Ser Leu Ser Val Ser Phe Pro
        195                 200                 205
Asp Val Thr Ser Asn Met Thr Ile Phe Cys Ile Leu Glu Thr Asp Lys
    210                 215                 220
Thr Arg Leu Leu Ser Ser Pro Phe Ser Ile Glu Leu Glu Asp Pro Gln
225                 230                 235                 240
Pro Pro Pro Asp His Ile Pro Trp Ile Thr Ala Val Leu Pro Thr Val
                245                 250                 255
Ile Ile Cys Val Met Val Phe Cys Leu Ile Leu Trp Lys Trp Lys Lys
            260                 265                 270
Lys Lys Arg Pro Arg Asn Ser Tyr Lys Cys Gly Thr Asn Thr Met Glu
        275                 280                 285
Arg Glu Glu Ser Glu Gln Thr Lys Lys Arg Glu Lys Ile His Ile Pro
    290                 295                 300
Glu Arg Ser Asp Glu Ala Gln Arg Val Phe Lys Ser Ser Lys Thr Ser
305                 310                 315                 320
Ser Cys Asp Lys Ser Asp Thr Cys Phe
                325
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